Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

kept separate by other authors have been united on the principle that when such forms are connected by numerous intergrading specimens they are to be considered as the same species, although typical specimens of the extreme forms may be easily distinguished.—C. R. B.

A CRITICAL REVISION of the genus Eucalyptus has been undertaken by Mr. J. H. Maiden,[5] the government botanist of New South Wales and director of the Botanic Gardens, Sydney. Part I of this publication has just appeared, containing in the preface a discussion of the variations in the genus, and a list of doubtful species referred to it and such species excluded from the genus, and a bibliography. The remainder of the part is devoted to a description of *Eucalyptus pilularis*: its synonymy, range, and affinities. Of the four plates two are given to the typical form of the species, another to the variety Muelleriana, and one to the illustration of fruits showing variation in the species.

NOTES FOR STUDENTS.

PROFESSOR BOWER[6] has announced the discovery of a sporophyll of *Lycopodium rigidum* bearing two sporangia side by side. The great rarity of this phenomenon emphasizes the remarkable constancy of the solitary sporangium among the true Lycopodiales.—J. M. C.

MOLISCH contends[7] that the buoyancy of the Cyanophyceae of the plankton does not depend upon gas vacuoles, and that the bodies which were so interpreted by von Strodtmann and Klebahn cannot possibly be gaseous. He was not able to determine whether they were fluid or solid, but inclines to the belief that they are viscous.—C. R. B.

HOLM[8] has used a study of *Carex fusca* and *Carex bipartita* as an occasion for severely criticising what he calls "type-species botany." He shows that the superficial determination of herbarium specimens reputed to be the type material of the older taxonomists may be very far from reaching reliable results. He says that such research should include a good deal more, such as a large amount of literary research, a study of the author's method of describing and of citing, the history of the herbarium since it left his hands, etc.—J. M. C.

[5] MAIDEN, J. H., A critical revision of the genus Eucalyptus. pp. 47. *pls. 4.* Published by Authority of the Government of the state of New South Wales. Sydney: W. A. Gullick. 1903. 2 shillings sixpence.

[6] BOWER, F. O., Note on abnormal plurality of sporangia in *Lycopodium rigidum* Gmel. Ann. Botany **17**: 278–280. 1903.

[7] MOLISCH, HANS, Die sogenannten Gasvacuolen und das Schweben gewissen Phycochromaceen. Bot. Zeit. **61**^{1}: 47–58. *figs. 4.* 16 Mar. 1903.

[8] HOLM, THEO., Studies in the Cyperaceae. XVIII. On *Carex fusca* and *Carex bipartita* All. Am. Jour. Sci. **15**: 145–152. 1903.

THE CYCADOFILICES, generally recognized as a group intermediate between ferns and cycads, have been known only by their habit and anatomical structure. The discovery of seeds belonging, in all probability, to Lyginodendron[9] lends strong support to the view that the Cycadofilices form the connecting link between ferns and cycads. Botanists must be prepared to find that many of the plants now classed under Cycadofilices possessed seeds and that many of the "fern fronds" of paleobotanists belong to spermatophytes.—CHARLES J. CHAMBERLAIN.

DARWIN AND PERTZ have confirmed their previous results in establishing artificial rhythm in plants[10] through subjecting them to periodically reversed stimulation by means of the intermittent clinostat. Both heliotropic and geotropic stimuli were used, the experiments with light being most successful. Rythmic curvatures were induced for an hour or more in *Phalaris canariensis* by 15-minute reversals of stimulation; the clinostat was then stopped, but the periodic response continued, showing one or two reversals of bending. Alternate unequal stimuli induced persistent unequal curvature.—C. R. B.

THE DEVELOPMENT of lateral members of *Linaria spuria* has been studied by Vöchting.[11] This plant is especially suitable for testing Schwendener's "contact theory," viz., that young organs are laid down in contact with the older, because in *L. spuria* the leaves are in whorls, while the flowers are arranged spirally. Vöchting bases his inferences on the transition region of the stem, and on the anomalies presented by the flowers. He comes to the same conclusion as in an earlier paper on Cactaceae, that the contact theory alone will not account for the position of lateral organs, and falls back on "inner causes" as an explanation of the phenomena observed.—M. A. CHRYSLER.

BLACKMAN[12] has shown that the behavior of germinating teleutospores of Uromyces, Puccinia, and Phragmidium depends upon the amount of water in which the spores are sown. With a thick layer of water, the germ-tube grows until it has exhausted the material of the spore, and then dies, no sporidia being produced. But if the water layer is sufficiently thin for the tube to reach the air before its growth ceases, it immediately produces sporidia in the usual way. When the teleutospores are germinated in moist air

[9] OLIVER, F. W., and SCOTT, D. H., On Lagenostoma Lomaxi, the seed of Lyginodendron. Read before Roy. Soc. London, May 7, 1903.

[10] DARWIN AND PERTZ, On the artificial production of rhythm in plants, with a note on the position of maximum heliotropic stimulation. Annals of Botany **17**: 93–106. 1903. See also *ibid.* **6**: 245. 1892.

[11] VÖCHTING, HERMANN, Ueber den Sprosscheitel der *Linaria spuria*. Jahrb. Wiss. Bot. **38**: 83–118. *pls. 2–3.* 1902.

[12] BLACKMAN, V. H., On the conditions of teleutospore germination and of sporidia formation in the Uredineae. New Phytologist **2**: 10–14. *pl. 1.* 1903.

the sporidia are formed almost immediately "and the promycelium consists of little or nothing more than the characteristic four cells." This phenomenon is probably quite general among the Uredineae, but the sporidia of Ustilago are freely formed under water.—BURTON E. LIVINGSTON.

C. K. SCHNEIDER has recently published an extended account of the native and introduced woody plants of middle Europe in their winter condition.[11] The work was done mostly at Vienna in the Botanic Garden and Hofmuseum, and is preparatory to an extended description of the woody plants of middle Europe. The first sixty-three pages are devoted to a general discussion and contain numerous cuts from photographs, illustrating habit, bark, and method of branching. The second part is a synoptical arrangement of the species, the classification being based upon characters of the buds and twigs. The species are excellently illustrated with line drawings, showing the external characters, and also by a diagrammatic cross-section. It is the most extensive work of this kind we have seen.—A. S. HITCHCOCK.

NEW OBSERVATIONS bearing upon the rôle of water in plants are made by Kurzwelly,[12] who has tested the power to resist poisons which is exhibited by various plant structures, mainly resting forms such as spores, seeds, etc. He finds that resisting power increases as the cells become drier, and that the less the water in the poison used, the longer can the cells withstand it. Thus, antiseptics are less effective in absolute alcohol than in water. This seems to be due to the inability of the solvent to penetrate the protective coverings. Gaseous poisons are more effective than those dissolved in other media than water. We may draw two general conclusions from these results: first, in most cases in order that penetration may occur, water must be present in seed-coats, etc.; and, secondly, the less water there is in the protoplasm, the less susceptible is it to the action of poisons.—BURTON E. LIVINGSTON.

MOLISCH [13] reports as a new discovery the presence of amoebae in Volvox. He has evidently overlooked the work of Hicks, published in 1860, in which a very complete account of "amoeboid bodies" in Volvox is given. According to Molisch the amoeba attacks the coenobium from without by thrusting in a pseudopodium. The number of amoebae varies from ten to thirty in each coenobium. He could not determine whether all the amoebae entered from without. As they were found in the colonies only late in November, Molisch concludes that as the vegetative period nears an end the Volvox cells become less resistant to attacks of the parasite. The account given by Hicks differs from that of Molisch only in interpretation. Hicks did not believe that amoeba could successfully attack a living cell, and as he found for each amoeba present a cell of the coenobium absent and the amoeba usually occupying the place of the missing cell, he concluded that the cell was transformed into an amoeba. A careful examination of the literature of a subject often changes a discovery into a confirmatory account.—W. J. G. LAND.

---

[13] Dendrologische Winterstudien. Jena: Gustav Fischer, 1903. pp. viii + 290. figs. 224.

[14] KURZWELLY, WALTHER, Ueber die Widerstandsfähigkeit trockener pflanzlicher Organismen gegen giftige Stoffe. Jahrb. Wiss. Bot. **38**: 291–341. 1902.

[15] MOLISCH, HANS, Amoeben als Parasiten in Volvox. Ber. Deutsch. Bot. Gesell. **21**: 20–23. *pls. 3*. 1903.

BENECKE publishes the following results of experiments on brood-buds of *Lunularia cruciata*.[16] Chemical stimulation is necessary for normal development; no variations of temperature or light will produce normal thalli or rhizoids in pure water; the small amount of mineral water dissolved from certain kinds of glass is sufficient, however. In such very weak solutions light is necessary for the development of rhizoids; one per cent. solutions of certain salts produce them either in light or darkness. Complete nutrient solutions produce large thalli and short rhizoids; lack of nitrates the reverse; lack of phosphates intermediate; lack of potassium a general retardation; lack of calcium stunting, especially of rhizoids; magnesium and sulfates make little difference; surplus iron inhibits growth of rhizoids. The effect upon rhizoids is the resultant between the direct influence upon them and the indirect influence through the thallus. The thallus is smaller and the rhizoids fewer, but usually longer in darkness. Immersed buds show "water-etiolation;" rhizoids in a moist chamber show "air-etiolation;" in solutions poor in nitrates, "etiolation due to nitrogen-hunger." This last idea is supported by experiments of Benecke and others with the rhizoids of *Riccia fluitans* and roots of higher plants.—L. M. SNOW.

CYTOLOGISTS will find in a paper by Häcker[17] an excellent discussion of the individuality of the parental chromatin. After a critical review of the literature, a large part of which has been contributed by himself, the following conclusion is stated: The autonomy of the paternal and maternal halves of the nuclei can be traced in copepods from the fertilized egg through the life cycle to the egg and sperm mother cells. During the maturation of the egg in Cyclops there is a rearrangement of the chromatin elements so that the egg cell contains, in equal measure, elements from the grandfather and grandmother. Connected with this rearrangement is a pairing of the grandfather and grandmother chromosomes. It may be suggested with great probability that this autonomy is of wide, if not general, distribution in plants and animals. The nuclear stages in which the idiomeres (partial nuclei) and gonomeres (double nuclei) appear are closely related. The second part of the paper deals with the nature of fertilization, mixed inheritance, affinity of chromosomes, individuality of the chromosomes and morphological organization of the nucleus, and the determination of sex. The theory that the chromosomes are permanent organs dominates the entire philosophical portion of the paper, and the evidence in favor of this theory is ably presented.—CHARLES J. CHAMBERLAIN.

---

[16] BENECKE, W., Ueber die Keimung der Brutknospen von *Lunularia cruciata*. Bot. Zeit. **61**^{1}: 19–46. *figs. 6.* 1903.

[17] HÄCKER, VALENTIN, Ueber das Schicksal der elterlichen und grosselterlichen Kernantheile. Morphologische Beiträge zum Ausbau der Vererbungslehre. Jena. Zeit. Naturwiss. **37**: 297–398. *figs. 16, pls. 1–4.* 1902.

NEWCOMBE[16] has shown conclusively that the so-called thigmotropic responses obtained by Sachs in terrestrial roots were not really such, but merely the effect of injury. The primary roots of seedlings of *Zea mays*, *Pisum sativum*, *Phaseolus vulgaris*, and *Vicia faba* were tested for thigmotropic curvatures with pins, pieces of brass wire, glass needles, and splinters of white oak, yellow and white pine, and tulip wood. None of the species exhibit curvatures with glass or tulip wood and none but Vicia with white pine, but they all curve in the manner described by Sachs when in contact with metal or yellow pine. These observations destroy the only remaining evidence of thigmotropism in terrestrial roots. The phenomenon may be regarded as established, however, for aerial roots. In another paper[17] the same author has shown that in rheotropically curving roots of *Brassica alba*, *Fagopyrum esculentum*, *Helianthus annuus*, and *Zea mays* (white popcorn), the sensory zone extends upward from the tip beyond the region of growth. The same fact was already proved by the same author in case of *Raphanus sativus*.[18] *Brassica alba* shows good rheotropic curves when the root tip is shielded from the water for a distance of 25^{mm}, although the region of growth extends back from the tip only 5 or 6^{mm}. The other roots show similar results.—BURTON E. LIVINGSTON.

GERNECK'S[19] experiments with wheat, oats, maize, and cress in various solutions of single and combined salts yielded the following main results. Of the single solutions, several chlorids, potassium phosphate, and water favor the development of stems rather than leaves, while the reverse is true of nitrates and sodium sulfate. Chlorids of the alkaline earths give stronger plants than those of the alkaline metals. $Ca(NO_3)_2$ produces dwarf plants with very hairy leaves and roots. The fewest hairs appear on plants with the strongest leaves. The most chlorophyll occurs in KNO_3 cultures. With complex solutions wheat can endure the addition of 1.5 per cent., cress 1 per cent. and maize 0.5 per cent. NaCl to the nutrient solution. The addition of

---

[18] NEWCOMBE, F. C., Sachs' angebliche thigmotropische Curven an Wurzeln waren traumatisch. Beih. Bot. Centralbl. **12**: 243–247. 1902.

[19] NEWCOMBE, F. C., The sensory zone of roots. Ann. Bot. **16**: 429–447. *fig. 1.* 1902.

[20] ————, The rheotropism of roots. BOT. GAZ. **33**: 177–198, 263–283 341–362. 1902.

[21] GERNECK, RUDOLPH, Ueber die Bedeutung anorganischer Salze für die Entwicklung und den Bau der höheren Pflanzen. Inaugural-Dissertation. pp. 147. Göttingen: W. F. Kaestner. 1902.

NaCl or the dilution of the nutrient solution produces fewer roots and shoots, narrower and shorter leaves with slower development, stronger thickening of the root elements, and a relative increase in the number of bundles. The presence of NaCl is accompanied by the formation of leaves with fewer air-spaces, and more palisade tissue, chlorophyll, and wax. Dilution of the nutrient solution causes an increase in the length of the roots. Nitrogen-free solutions favor the development of stems. The reader observes in the different cultures a variation of osmotic pressure which does not enter into the author's discussion. This of course makes the results at least questionable. —L. M. SNOW.

A HYBRID COTTON obtained by crossing *Gossypium barbadense* and *G. herbaceum* has been studied by Cannon.[22] The investigations deal with the two mitotic divisions by which the microspore mother cell gives rise to the four microspores. In practically all anthers of the hybrid cotton both normal and abnormal conditions are present. In normal microspore mother cells the first nuclear division is heterotypic, the second homotypic; and the two divisions are the exact homologues of these divisions in pure races of plants. The two sizes of the chromatin rings or loops found in hybrid pigeons and in some pure forms in plants were not found in the hybrid cotton. The behavior of the chromatin at the first division could not be traced with sufficient accuracy to determine whether the two daughter nuclei were of pure or of mixed descent. If the paternal and maternal chromatin is segregated as a result of the two mitoses in the microspore mother cell so as to form nuclei with unisexual chromatin, such an organization of the chromatin would form a morphological basis for variation in accord with the Mendelian laws. Many abnormal cells were observed, but these degenerate before the first division of the microspore mother cell. Amitosis is not rare and is probably a factor which leads to infertility. A few mother cells showed two spindles, as described by other writers on hybrids, but in the hybrid cotton such cells degenerate before the first nuclear division is complete.—CHARLES J. CHAMBERLAIN.

A THIRD REPORT on the marine resources of Hokkaido has been published by the Fishery Bureau of the Hokkaido government, Japan. It is devoted to the Laminariaceae and the Laminaria industries of the island and constitutes a volume of 212 pages illustrated by 41 plates. This is a very important contribution to our knowledge of the kelps, but as it is printed in the Japanese language it must remain somewhat inaccessible to most students. The volume contains three papers: (1) on the Laminariaceae of Hokkaido, by Professor Kingo Miyabé; (2) on the Laminaria industries of Hokkaido, by Shin Yanagawa; and (3) chemical analyses of Laminaria, by Professor Kintaro Oshima. In each of these the material is almost altogether original, and the whole constitutes a unique publication of great value. Professor Miyabé considers the outer and inner morphology, propagation, distribution, economic uses, pathology, and classification of the kelps, and describes several new species—eight in Laminaria, three in Alaria, one in Undaria with Dr. Okamura, and establishes a new genus, Kjellmanniella, evidently not very far from Pleurophycus of Setchell and Saunders. Of this two species and one variety are described. The longest of the three articles is the one by Mr. Yanagawa, in which he describes the kelp beds from an economic point of view and discusses the collections, seasons, tools, methods, boats and co-operative agreement among the fishermen. Statistics are given concerning the history of the industry, its total value for the last thirty years, the average annual harvest, the profits of the fishermen, etc. Methods of curing the kelp, prices, government supervision, and a number of other matters of interest are considered, and the trade varieties of kelp are named and described. Professor Kintaro Oshima supplies a brief paper, giving the methods and results of chemical analyses and some notes on organic compounds peculiar to the kelps. The plates are handsome lithographs, quarto size, setting forth the habit of new and important species, figuring the anatomy, and affording views of fishing scenes, tools, warehouses, bales of seaweed and beds of kelp.—CONWAY MACMILLAN.

---

[22] CANNON, WILLIAM A., Studies in plant hybrids: The spermatogenesis of hybrid cotton. Bull. Torr. Bot. Club **30**: 133–172. *pls. 7–8.* 1903.